Amendments to the Claims:

Listing of Claims:

Claim 1 (currently amended): A bipolar junction transistor, comprising:

a substrate;

a dielectric layer formed on the substrate;

an opening formed in the dielectric layer to expose a portion of the substrate;

a selective implant collector region formed in the substrate and beneath the opening;

a heavily doped polysilicon layer formed on a sidewall of the opening to define a self-aligned base region in the opening;

an intrinsic base doped region positioned in a bottom of the opening and within the self-aligned base region defined by the heavily doped polysilicon layer;

a spacer formed on the heavily doped polysilicon layer to define a self-aligned emitter region in the opening; and

an emitter conductivity layer being filled within the self-aligned emitter region, and a PN junction being formed between the emitter conductivity layer and the intrinsic base doped region.

Claim 2 (original): The bipolar junction transistor of claim 1, wherein the heavily doped polysilicon layer comprises a boron dopant with a dosage ranging from 1E19 to 1E21 atoms/cm^2.

Claim 3 (original): The bipolar junction transistor of claim 1, wherein the substrate is a silicon substrate.

Claim 4 (original): The bipolar junction transistor of claim 1, wherein the substrate is a non-selective epitaxial silicon substrate.

Claim 5 (original): The bipolar junction transistor of claim 1, further comprising a salicide layer formed on the emitter conductivity layer.

Claim 6 (canceled)

Claim 7 (original): The bipolar junction transistor of claim 1, further comprising an extended conductivity layer formed on the dielectric layer to connect to the heavily doped polysilicon layer.

Claim 8 (original): The bipolar junction transistor of claim 7, further comprising an oxide layer and a silicon nitride layer formed between the extended conductivity layer and the dielectric layer.

Claim 9 (original): The bipolar junction transistor of claim 7, wherein the extended conductivity layer is composed of in-situ doped polysilicon.

Claim 10 (original): The bipolar junction transistor of claim 7, further comprising a salicide layer formed on the extended conductivity layer.

Claim 11 (original): The bipolar junction transistor of claim 1, wherein

the substrate further comprises at least a deep isolation trench.

Claim 12 (original): The bipolar junction transistor of claim 11, wherein the substrate further comprises at least a channel stop region formed in the bottom of the deep isolation trench.

Claim 13 (original): The bipolar junction transistor of claim 1, wherein the intrinsic base doped region comprises a boron dopant.

Claim 14 (currently amended): A bipolar junction transistor, comprising:

a substrate;

at least a deep isolation trench formed in the substrate and at least a channel stop region formed in the bottom of the deep isolation trench;

a dielectric layer formed on the substrate;

an opening formed in the dielectric layer to expose a portion of the substrate;

a doped polysilicon layer formed on a sidewall of the opening and on the dielectric layer outside of the opening, the doped polysilicon layer defining a self-aligned base region in the opening;

an intrinsic base doped region positioned in a bottom of the opening and within the self-aligned base region defined by the doped polysilicon layer;

a spacer formed on the doped polysilicon layer to define a self-aligned emitter region in the opening; and

an emitter conductivity layer being filled within the self-aligned emitter region, and a PN junction being formed between the emitter conductivity layer and the intrinsic base doped region.

Claim 15 (original): The bipolar junction transistor of claim 14, wherein the doped polysilicon layer comprises a boron dopant.

Claim 16 (original): The bipolar junction transistor of claim 14, further comprising a salicide layer formed on the emitter conductivity layer and on the portion of the doped polysilicon layer outside of the opening.

Claim 17 (original): The bipolar junction transistor of claim 14, further comprising a selective implant collector (SIC) region formed in the substrate beneath the intrinsic base doped region.

Claim 18 (canceled)

Claim 19 (canceled)

Claim 20 (original): The bipolar junction transistor of claim 14, wherein the intrinsic base doped region comprises a boron dopant.

Claim 21 (new): A bipolar junction transistor, comprising:

a substrate;

at least a deep isolation trench formed in the substrate and at least a channel stop region formed in the bottom of the deep isolation trench;

a dielectric layer formed on the substrate;

an opening formed in the dielectric layer to expose a portion of the substrate;

a heavily doped polysilicon layer formed on a sidewall of the

opening to define a self-aligned base region in the opening;

an intrinsic base doped region positioned in a bottom of the opening and within the self-aligned base region defined by the heavily doped polysilicon layer;

a spacer formed on the heavily doped polysilicon layer to define a self-aligned emitter region in the opening; and

an emitter conductivity layer being filled within the self-aligned emitter region, and a PN junction being formed between the emitter conductivity layer and the intrinsic base doped region.